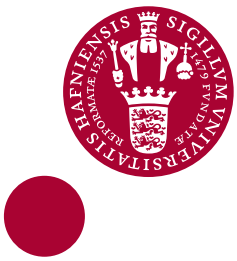

Structure, form, and function of PIE primary deverbal i-stems

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Structure, Form, and Function of PIE Primary Deverbal *i*-stems*

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1. Proto-Indo-European *i*-stems

A considerable number of nouns in Proto-Indo-European inflect as *i*-stems. If we concentrate on the primary *i*-stems, the functions typically met with include deverbal abstract nouns, deverbal agentival adjectives, and second members of compounds; cf. Brugmann and Delbrück 1906:167–75. To this, we may add a group of unanalyzable *i*-stems (animate and neuter) as well as the "Caland formations"; cf., e.g., Rau 2009:127–86.

The *i*-stems of particular interest to this study are the primary deverbal ones, mostly those of the abstract-noun type, but we shall also make some notes on the agentival adjectives. Building on my own (Hansen 2014:51–121) observation that, originally, the phonotactics of the root decided if a primary deverbal *i*-stem would appear with the reflex of radical *o*- or zero grade in Germanic, I proceed to investigate if the distribution found in Germanic is valid also for at least some of the remaining Indo-European branches and, consequently, for Proto-Indo-European.

2. Primary deverbal *i*-stems in Germanic

2.1. Abstract nouns

Bearing in mind the many points of reference between the Germanic *i*-stems and other inflectional classes, we are hardly surprised that numerous transitions of

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lexemes from the *i*-stems to these other classes and vice versa take place in most, if not all, ancient Germanic languages.[1] For historical and comparative linguists who attempt to separate archaisms from innovations, such working conditions greatly complicate the task. Without any other clues besides inflectional information, historical and comparative linguists are often faced with the insoluble task of determining whether a given Germanic noun should be categorized and reconstructed as, say, a masculine *a*- or *i*-stem, a masculine *a*- or *ja*-stem, or a feminine *i*- or *ō*-stem. Consequently, they must transcend the field of inflectional morphology in their search for further clues that might help them determine the exact derivational prehistory of a given noun.

As I have previously demonstrated by analyzing around 100 Germanic primary deverbal *i*-stems (Hansen 2014:51–121), one area of linguistics that might provide historical and comparative linguists with additional information of this kind is the intersection of derivational morphology and phonotaxis. Most grammars of Proto-Germanic and accordingly most scholars occupied with Germanic derivational morphology, e.g., Krahe and Meid (1967:65–6), Hinderling (1967), Bammesberger (1990:128), Schaffner (2001:421–35), and Casaretto (2004:166–9), have noticed that the bulk of Germanic *i*-stem abstract nouns appear

- in the masculine gender
- with radical zero grade
- with voiced Verner's variants root-finally, indicating that the Proto-Indo-European accent was located on the *i*-stem suffix
- with the function of verbal abstracts to strong verbs (i.e., action nouns which have often been secondarily concretized as resultative nouns)

Furthermore, as noted by Hinderling (1967:42–102), such nouns often pair with *ga*-prefixed neuter *a*-stem collective abstracts.

However, far from all such *i*-stems appear with radical zero grade. In a considerable number of cases, we find radical *o*-grade (PIE **o* > PGmc. **a*), and even full and lengthened-grade forms are attested. We may find part of the reason for this mixture of different radical ablaut grades in another circumstance noted by Hinderling (1967:102–16) and Bammesberger (1990:128–37): primary *i*-stem verbal abstracts are synchronically and productively formed from the same ablaut

1 For a brief overview of the transitional tendencies operating within the *i*-stems, cf., e.g., Thöny 2013:66–70.

grade as we find in the stem of the preterite participle of the corresponding strong verb. Thus, when we find different synchronic ablaut grades in the primary deverbal *i*-stems, this variation simply mirrors that of the preterite participle of the corresponding strong verbs. One example from each Germanic strong-verb-ablaut class will suffice:

- I: PGmc. ***li**di-* 'going' (~ **līþa-* 'go'; pret.ptc. **li**d**ana-*)
- II: PGmc. **r**u**ki-* 'smell' (~ **reuka-* 'smell'; pret.ptc. **r**u**kana-*)
- III: PGmc. **dr**u**nki-* 'drink' (~ **drenka-* 'drink'; pret.ptc. **dr**u**nkana-*)
- IV: PGmc. **b**u**ri-* 'son' (~ **bera-* 'bear, carry'; pret.ptc. **b**u**rana-*)
- V: PGmc. **kw**e**di-* 'talk' (~ **kweþa-* 'talk'; pret.ptc. **kw**e**dana-*)
- VI: PGmc. ****a**gi-* 'fear' (~ **aga-* 'fear'; pret.ptc. ****a**gana-*)
- Redupl.: PGmc. **f**a**ngi-* 'catch' (~ **fanha-* 'catch'; pret.ptc. **f**a**ngana-*)

In the class I–IV strong verbs, we therefore typically observe the expected zero grade in the primary deverbal *i*-stems. In the class V strong verbs, by contrast, the preterite participle displays radical full grade, and in the preterite participle of class VI strong verbs, we encounter a synchronic *a*-vowel. The reduplicated strong verbs complicate the ablaut picture even further, and especially so because their preterite participles may display synchronic radical PGmc. **a*, **ē*, or **ō* in the class I–VI non-ablauting reduplicated strong verbs and PGmc. **ē* in the class VII ablauting reduplicated strong verbs.

As against the numerous examples of masculine *i*-stem verbal abstracts derivationally matching the ablaut grade of the stem of the preterite participle of a corresponding strong verb, we encounter a far smaller quantity of, again mainly masculine, *i*-stem verbal abstracts that have the derivational appurtenance to a strong verb in common with the former group. This second group, however, differs from the regularly formed *i*-stem verbal abstracts because the ablaut grades of its members do not match the stem of the corresponding preterite participle. Examples include:

- II: PGmc. **l**au**di-* 'form' (~ **leuda-* 'grow'; pret.ptc. **l**u**dana-*)
- II: PGmc. **s**au**di-* 'meat broth' (~ **seuþa-* 'boil'; pret.ptc. **s**u**dana-*)
- III: PGmc. **b**a**lgi-* 'sack, bag' (~ **belga-* 'swell'; pret.ptc. **b**u**lgana-*)
- III: PGmc. **st**a**ngi-* 'bar, pole' (~ **stenga-* 'stick'; pret.ptc. **st**u**ngana-*)
- V: PGmc. **kw**e**di-* 'talk' (~ **kweþa-* 'talk'; pret.ptc. **kw**e**dana-*)
- VI: PGmc. ****a**gi-* 'fear' (~ **aga-* 'fear'; pret.ptc. ****a**gana-*)
- V: PGmc. **m**a**ti-* 'food' (~ PG **meta-* 'measure', pret.ptc. **m**e**tana-*)

2.2. Adjectives

Of marginal relevance to my previous study (Hansen 2014:51–121), which focused on the formation of nouns only, were the Germanic primary *i*-stem adjectives, for which see, e.g., Krahe and Meid 1967:66–7 and Bammesberger 1990: 259–61. *i*-stem adjectives fall into two functional groups in Germanic: gerundives, i.e., adjectives of possibility, on the one hand as exemplified by PGmc. **flugi-* 'able to fly' (derived from **fleuga-* 'fly') and **ēti-* 'edible' (derived from **eta-* 'eat'), and adjectival agent nouns on the other as illustrated by PGmc. **swiki-* 'deceiving' (derived from **swīka-* 'deceive') and **tēmi-* 'suitable, proper' (derived from **tema-* 'be proper'). Formally speaking, both functional types tend to appear with radical zero grade when derived from class I–III strong verbs and with radical lengthened grade (as found in the stem of the Germanic preterite plural) when derived from class IV–VI strong verbs.

In my view, it is quite feasible that the lengthened-grade type originally arose as a result of vr̥ddhi. With their general function of designating 'pertaining to X, relating to X', adjectives constitute the ideal environment for vr̥ddhi to occur. Like the *i*-stem nouns, these *i*-stem adjectives may easily adapt to the ablaut system of the Germanic strong verbs, but whereas the nouns are closely connected to the stem of the preterite participle, the adjectives must be analyzed as corresponding to the ablaut grade of the stem of the preterite plural.

Counterexamples seem to occur, though, but on close scrutiny all are, in fact, regular. The motivation for PGmc. **baugi-* 'flexible, pliant' (derived from **beuga-* 'bend') not to appear as †*bugi-* might be identical to the explanation provided for **laudi-* 'form, appearance', viz. that it is only attested as a second member of an exocentric compound where, from a Proto-Indo-European point of view, transition of thematic stems (*a*-stems) into *i*-stems is an expected and regular process. Only PGmc. **kausi-* 'choosy' (derived from **keusa-* 'test, trial, select, prefer') completely resists analysis within the framework of the posited structure of the adjectival *i*-stems by displaying both synchronically aberrant radical *o*-grade and the unexpected unvoiced Verner's variant of the root-final consonant. First speculations inevitably focus on the possibility of **kausi-* being of the same nature as **baugi-* 'flexible, pliant' and **laudi-* 'form, appearance', viz. a second member of an exocentric compound, cf. Hansen 2014:89–90; but unlike these, **kausi-* (as reflected in OE *cīes*, *cīese*) only appears as a simplex, whereas the related *a*-stem adjective **kausa-* (as reflected in OE *(or-)cēas* 'invulnerable' and *(un-be-)cēas* 'indisputable, incontrovertible') only exists as a second member

of compounds. Consequently, the only analysis that presents itself so far is to regard **kausi*- as an archaism.

2.3. Original distribution of ablaut grades

From the previous two sections we have learned that, even if the bulk of the material (approx. 70%; cf. Hansen 2014:55–88) neatly reflects the synchronic Germanic system of aligning the ablaut grades of the primary deverbal *i*-stems and the preterite participles of the corresponding strong verbs, a remaining residue does not. Some of these forms we may explain through transformation of old *s*-stems (with radical full grade) or root nouns to *i*-stems, through "misinterpretation" of the radical ablaut grade due to the homophony of the infinitive and preterite participle stem of the Germanic strong verbs in classes V and VI, or as vr̥ddhi-formations.[2] However, some forms remain unexplained, most of which display reflexes of radical *o*-grade; cf. the examples in §2.1.

In order to unveil the prehistory of this *o*-grade type and of the observed interchange between *o*- and zero grade forms (as well as of the mere existence of *e*- and *ē*-grade forms) in the material, we may consider the claim of Widmer (2004: 50–1, 62–7), Rau (2009:181), Grestenberger (2014:90–1), and others that the Proto-Indo-European primary deverbal *i*-stems formed part of a derivational chain containing both *ē*/*e*- and *o*/*e*-ablauting acrostatic nouns, *e*/∅-ablauting proterokinetic nouns, and hysterokinetic nouns with a fixed radical zero grade.[3] However, even if such a system would account neatly for the mere existence of *i*-stem forms with all four types of ablaut grade (*ē*, *e*, *o*, zero), it fails to take into account the fact that what is found in Germanic is mainly a mixture of *o*- and zero grade without any semantic differentiation.

Consequently, I took a different approach (Hansen 2014:113–21) by attempting to apply Rasmussen's (1989:158–75) hypothesis that nouns of the type Gk. τομή 'cutting, incision, insection' or Lat. *toga* 'toga' are actually identical to

2 Forms such as PGmc. **leudi*- 'man' (pl. 'people'), **sweli*- 'callosity, callous skin', **kwemi*- 'outcome, result', **weni*- 'friend', **wēni*- 'hope, expectation', **kwedi*- 'talk', and **wrōgi*- 'complaint, accusation'; cf. also Hansen 2014:88–105. For instance, **kwedi*- 'talk' is synchronically analyzable as a verbal abstract whose radical ablaut grade matches the stem of the preterite participle of the corresponding class V strong verb **kweþa*- 'say, talk'.

3 The *ē*/*e*-ablauting type would either constitute "Narten variants" of the *o*/*e*-ablauting type, or the latter would be internally derived from the former; cf., e.g., the discussion in Grestenberger 2009:5. For these two acrostatic types in general, cf. also, e.g., Nussbaum 1998:150 n.179, Schindler 1994:398, and Rasmussen 1989:255.

nouns of the type Lat. *fuga* 'flight, escape', i.e., feminine abstract nouns of the structure PIE **CC-éh₂-*.[4] More precisely, Rasmussen suggests that nouns formed from PIE roots of the structures *ToT, RoT, HRoT, TRoT, sToUT, HRoUT, sRoUT, UoT, ToRH, ToR, sToR, HToR, TRoR, ToU, TRoU, sRoU, TOUh₁, sToUh₁, Tos, HUoRs, ToRT, sToRT, RoRT, TRoRT, sTRoRT, sRoRT, HRoRT, URoRT, soRT*, and *UoRT* keep the PIE **o* of their root, whereas nouns formed from roots of the structures *T_UT, R_UT, H_UT, TR_UT, sR_T, H_RH, U_RH, T_Uh₂/₃, sT_Uh₂/₃, U_UH, TR_TH?, T_ST, H_U, TT_H, TU_H, HR_H, C_HU, C_RHU*, and *sU_RT* lose it.[5]

Below I list the Proto-Germanic primary deverbal *i*-stem abstracts analyzed in Hansen 2014:55–105 in accordance with their level of adaption to the *toga*/*fuga* type.[6] First, we consider those with a radical zero grade. These we may divide into two subgroups: (1) those where the zero grade would also be expected in the "*toga*/*fuga* system" suggested by Rasmussen, and (2) those where it would not. Each of the two subtypes we may, theoretically, further divide into (a) those having, originally or by secondary harmonization, identical ablaut grades in the *i*-stems and in the preterite participles of a corresponding strong verb, and (b) those displaying different ablaut grades in these two forms.

(1) Zero grade expected in the "*toga*/*fuga* system"

a. Identical ablaut grades: PGmc. **biti*- 'bite, prick', **bliki*- 'appearance, emergence', **gridi*- 'step, standing', **lidi*- 'going', **flugi*- 'escape', **guti*- 'filling, pouring', **hluti*- 'share, lot', **lugi*- 'lie, deception', **ruki*- 'smell; smoke', **tugi*- 'pull, draw', **swulgi*- 'drink, swallow, gulp', **swulti*- 'starvation', **wunni*- 'suffering, pain', and **fal(l)i*- 'fall, crash'

b. Different ablaut grades: No examples

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4 In light of Rasmussen's (1988:313) claim that the thematic vowel PIE **e* ~ **o* was originally weakened into **i* ~ **u* when unstressed, speculations as to whether the primary *i*-stems with radical *o*-grade could simply be variants of the widespread *o*-grade thematic nouns and adjectives of the type τόμος/τομός seem not too far-fetched. Rasmussen (1988:320–3) himself was not slow to suggest that option. Also Casaretto (2004:173 n.530, with lit.) suggests a connection, albeit independent of any regular sound change of PIE **e* ~ **o* > **i* ~ **u*, between Germanic *i*-stems of the PGmc. **balgi*-type and the PIE τόμος-type.

5 The "_" indicates the position of the PIE ablauting vowel when not in the zero grade.

6 For reflexes in the individual Germanic languages, extra-Germanic cognates, and other etymological notes, cf. Hansen 2014:55–105.

(2) Zero grade unexpected in the "*toga*/*fuga* system"

a. Identical ablaut grades: PGmc. **hrini-* 'touch', **siki-* 'sigh', **slidi-* 'misstep, slip; error', **sliki-* 'furrow', **sliti-* 'break, split', **snidi-* 'cut', **stigi-* 'ascent, rising', **stiki-* 'prick, stab', **skuti-* 'shot, shooting', **slupi-* 'slip; piece of garment to slip over one's head', **brungi-* 'bringing', **drunki-* 'drink', **dunti-* 'shot', **hwurbi-* 'way, passage', **kurbi-* 'fragment, bit, piece', **sprungi-* 'jump', **stungi-* 'prick, stab', **stunkwi-* 'smell', **sturki-* 'strength', **wurdi-* 'fate, destiny, chance', **bruki-* 'breach, crack, fragment', **buri-* 'son, progeny', **drupi-* 'blow, stroke', **kuli-* 'cold', **kwumi-* 'coming', and **stuni-* 'groan'

b. Different ablaut grades: No examples

If we accept the hypothesis of Hansen 2014:110–4 that the Germanic *i*-stem verbal abstracts, which mainly display radical zero and *o*-grade ablaut and synchronically match the ablaut grade of the stem of the preterite participle of a corresponding strong verb, have actually developed from only one archaic type of suffixally stressed *i*-stem abstract nouns with complementary distribution of *o*- and zero grade according to radical phonotactics, the forms listed under (1a) are clearly the ones serving as pivots for the reinterpretation. Hence, the many forms of (2a) need no further explanation: we may straightforwardly analyze them as productively derived with the ablaut grade found in the stem of the preterite participle of their corresponding strong verbs. Their very etymologies reveal that many of them are, indeed, secondary. I will only mention here the morphological background of PGmc. **hrini-* 'touch' and **drunki-*, in the roots of which nasal infixes have been inserted, with the consequence that these *i*-stems do not continue true Proto-Indo-European primary *i*-stems.

Turning now to *i*-stems with a radical *o*-grade, we may posit a subdivision similar to that of the zero-grade *i*-stems.

(3) *o*-grade expected in the "*toga*/*fuga* system"

a. Identical ablaut grades: PGmc. **kali-* 'cold' and **stauti-* 'thrust, push, blow'

b. Different ablaut grades: PGmc. **smauki-* 'smoke', **balgi-* 'sack, bag', **bandi-* 'captivity', **dranki-* 'drink', **stangi-* 'bar, pole, staff, stake', **stankwi-* 'smell', **drapi-* 'blow, stroke', and **mati-* 'food'

(4) *o*-grade unexpected in the "*toga*/*fuga* system"

a. Identical ablaut grades: No examples

b. Different ablaut grades: PGmc. **hlauti-* ‘share, lot’, **laudi-* ‘form, appearance’, **rauki-* ‘smoke’, **swalgi-* ‘abyss; swirl, whirlpool’, **swangwi-* ‘swing; stroke’, and **swanki-* ‘misery, sorrow; toil; temptation’

Parallel to the forms listed in (1a), the two forms in group (3a) may theoretically have served as pivots for the reinterpretation of the archaic complementary distribution of *o*- and zero grade according to radical phonotactics in the *i*-stem nouns into a new system where the radical ablaut grades of the *i*-stem abstract nouns synchronically match those of the stems of the preterite participle of their corresponding strong verbs.[7] Truly archaic and relatively isolated examples of *i*-stems of the type PIE **CoC-í-* are listed in group (3b). Also, as is the case for their synchronically regular zero-grade counterparts PGmc. **drunki-* ‘drink’ and **stungi-* ‘prick, stab’ listed in (2a), the roots of **dranki-* ‘drink’ and **stangi-* ‘bar, pole, staff, stake’ have been enlarged with a nasal infix, which implies that we may in no way regard these two *i*-stems as archaisms. Their conformity to the complementary distribution of *o*- and zero grade in the “*toga*/*fuga* system” is merely coincidental.

The six forms listed in group (4b) are the only ones that may justly contradict the hypothesis of Hansen 2014:110–4 presented here. Three of the forms, however, viz. PGmc. **swalgi-* ‘abyss; swirl, whirlpool’, **swangwi-* ‘swing; stroke’, and **swanki-* ‘misery, sorrow; toil; temptation’, all turn out to display the root structure *SUoRT*. Even if Rasmussen (1989:164) claims the expected “*toga*/*fuga* outcome” of that phonotactic constellation to be *SU_RT* rather than *SUoRT*, his claim seems to be supported by only one example, viz. Goth. *saúrga* ‘sorrow’ < PGmc. **swurgō-* < PIE **su̯r̥gʰ-éh₂-*. Admittedly, no arguments exist that may unfailingly contradict the claim of Rasmussen. Nevertheless, when adding the statistics of one form in favor of *SU-RT* as against three in favor of *SUoRT* as also the circumstance that *SU_RT* is the only one of the many constellations ending in *-RT* where Rasmussen (1989:162) expects zero grade rather than *o*-grade, we should at least consider alternative options for PIE **su̯r̥gʰ-éh₂-*. In fact, Rasmussen (1989:159) did so already by admitting that some nouns of the type PGmc. **CC-eh₂-* may reflect thematizations of old root nouns, especially when stressed on the root or when coexisting with an attested root noun. Rasmussen’s examples

7 Of these two, only PGmc. **stauti-* ‘thrust, push, blow’ may prove original, though, seeing that **kali-* ‘cold’ has clearly been formed secondarily to the, in itself, newly shaped preterite participle **kalana-* ‘cold’, the archaic participial form being **kulana-* ‘feeling shivery’ (< PIE **gl̥H-onó-*) as reflected in OSw. *kolin*.

include, e.g., the comparison of the *eh₂*-stem Gk. δίκη 'custom, usage; order, right' with the root noun Ved. *díś-* 'precept, order, manner etc'.

As for the remaining three forms, the first, viz. PGmc. **hlauti-* 'share, lot', might have been created by analogy with other nominal *o*-grade derivatives of the same root, e.g., **hlautō-* 'sacrificial blood; lot' or **hlauta-* 'share, lot'. The second, viz. **laudi-* 'form, appearance', was demonstrated by Hansen (2014:89–90) to be an old thematic stem only transferred into an *i*-stem due to its appearance as a second member of an exocentric compound. The last one, viz. **rauki-* 'smoke', may be derived not from the verb **reuka-* 'smoke' (originally 'smell') directly, but from **raukia-* 'smoke' if the latter is to be analyzed as a causative ('make smell' > 'smoke') rather than as a denominal verb.

Finally, for the radical phonotactics of about thirty *i*-stem nouns, Rasmussen 1989:158–75 does not list evidence in favor either of zero or of *o*-grade of the *toga*/*fuga* type. For that reason, we shall not go into further details about these, many of them being clearly secondary anyway. I will mention here only two, viz. PGmc. **stadi-* 'place, town', which is, in reality, a *ti*-stem rather than a primary *i*-stem, and the onomatopoetic **hwini-* 'whistling, whiz'.

3. Primary deverbal *i*-stems in some of the remaining branches

While in Hansen 2014:51–121 I attempted to describe the distribution of ablaut grades in Germanic *i*-stems, I only commented very briefly on the situation in the remaining Indo-European branches. I now plan to turn my attention to this task, for only by doing so may we be able to determine which forms and functions are archaic, which are productive, and which are neither. Unfortunately in the limited space available to me here, I cannot treat the data of all the Indo-European branches where primary *i*-stems have entirely or partially remained a separate category and will consequently focus on Sanskrit and Greek in this paper.

3.1. Sanskrit

As ingeniously analyzed by Debrunner (1954:291–307), who is followed, e.g., by Grestenberger (2014:90–1) and Hinderling (1967:104–6), we may classify the primary *i*-stems of Sanskrit in two main groups: agent nouns and action nouns.

The group of agent nouns consists of verbal adjectives with radical zero grade preceded by a stressed reduplicative syllable; cf., e.g., Skt. *cákri-* 'working', and true agent nouns with a stressed radical vowel mainly in the zero grade. Examples of this latter type include some with radical zero grade, e.g., Skt.

dhúni- ‘roaring, sounding, boisterous’ (< PIE **dʰún-i-*),[8] *bhŕ̥mi-* ‘whirling round, restless, active, quick’ (< PIE **bʰr̥m(H)-í-*), and *kr̥tí-* ‘knife’ (< PIE **(s)kr̥-t-í-*, unexpected accent), and some with radical *e-* or *o*-grade, e.g., Skt. *añjí-* ‘applying an ointment; ointment’ (< PIE **h₃ongʷ-í-*), *arcí-* ‘ray, flame’ (< PIE **h₁orkʷ-i-*), *ājí-* ‘race, combat’ (< PIE **h₂oĝ-í-*), *granthí-* ‘knot, tie’ (< PIE **g(ʷ)ront(h₂)-í-*, only Indo-Iranian), *ghāsí-* ‘food’, i.e., ‘something eaten’ (etymology uncertain), *svarí-* ‘noisy, boisterous’ (< PIE **sṷor(H)-i-*), and *draví-* ‘smelter’ (< PIE **droṷH-i-*?). Due to the Indo-Iranian neutralization of Indo-European vowel timbres, it is often not possible to ascertain whether a given form represents *e-* or *o*-grade. Only one of the cases mentioned here, viz. *ghāsí-* ‘food’, unambiguously represents *o*-grade as evidenced by the presence of both a velar initial and lengthening of the vowel by Brugmann’s Law. Presumably, we find *o*-grade in *ājí-* ‘race, combat’, too, but formally *ē*-grade remains an option. Whereas the former *i*-stem agent-noun subtype is unknown to any other branch of Indo-European, we may draw strong parallels from the latter type to the Germanic *i*-stem adjectival agent nouns mentioned in §2.2, the only caveat being that Verner’s Law points to all Germanic *i*-stem adjectival agent nouns (save for PGmc. **kausi-* ‘choosy’) continuing Proto-Indo-Europan suffixal accent.

Constituting the second major group of Sanskrit primary *i*-stems, action nouns, too, are divisible into two subgroups, viz. on the one hand fossilized dat. sg. forms created from the unstressed zero grade of the root and functioning synchronically as infinitives—cf., e.g., Ved. *iṣáye* ‘to send out, to cause to move’ (< PIE **h₂iǩ-éi̯-ei̯*) and *dr̥śáye* ‘to see, to behold’ (< PIE **dr̥ǩ-éi̯-ei̯*)—and true action nouns with more or less unpredictable gender, accent, and radical ablaut grade on the other. Thus, in some forms of the latter type, we find radical zero grade just as in the synchronic infinitives; cf., e.g., Skt. *tují-* ‘propagation’ (< PIE **tug-í-*?; cf. the related root *tuc-*), *bhr̥mí-* ‘quickness’ (< PIE **bʰr̥m(H)-í-*) as well as concretized abstracts such as *kr̥ṣí-* ‘ploughing, cultivation, agriculture’ (< PIE **kʷl̥s-í-*), *nr̥tí-* ‘grand appearance, show’ (etymology uncertain, maybe < PIE **(h₂)nr̥(-)t-í-*), and *bhují-* ‘granting of enjoyment, favor’ (< PIE **bʰug-í-*). In others, the radical ablaut grade is less certain. We find instances of possible, though not entirely certain, *e-* or *o*-grade; cf., e.g., Skt. *dhrā́ji-* ~ *dhrājí-* ‘whirlwind; impulse, force (of a passion)’ (etymology uncertain), *jálpi-* ‘inarticulate or low speech, muttering’ (etymology uncertain), *rándhi-* ‘subjection, subjugation’ (< PIE

8 Etymological notes in this section are based on Mayrhofer 1992–2001 and Grestenberger 2009:28–156.

**lend^{h}-i-* or **lond^{h}-i-*?), *(sam-)taní-* ‘tones, music’ (< PIE **(s)tenh$_2$-i-*, **(s)tonh$_2$-i-*, or **(s)tn̥h$_2$-i-*), and *grā́hi-* ‘female spirit seizing men’, i.e., ‘seizer’ (< PIE **g^{h}rób^{h}-i-*) (agentive semantics). Of the examples mentioned here, *o*-grade presents itself as the preferred option in the radical vowels of *dhrā́ji- ~ dhrājí-* and *grā́hi-* due to Brugmann’s Law, but original lengthened grade of course remains an alternative. This latter subtype strongly tends, though, to display radical zero grade and, when the action nouns keep some of their verbal semantics, feminine gender. This type appears to have a strong connection with the Germanic *i*-stem verbal abstracts, differing from those mainly by the general adoption of feminine gender in Sanskrit versus masculine gender in Germanic.

Sanskrit and Germanic thus seem to have two common points of reference as regards the primary *i*-stems, viz. 1) agent nouns in Sanskrit (stressed on the root syllable appearing in the zero grade) compared to adjectival agent nouns in Germanic (mainly stressed on the *i*-stem suffix and mainly with radical zero grade), and 2) infinitives and action nouns in Sanskrit (mainly stressed on the *i*-stem suffix and with unpredictable radical ablaut grade) compared to action nouns, i.e., verbal abstracts, in Germanic (also stressed on the *i*-stem suffix and with unpredictable radical ablaut grade).

As for the original distribution of ablaut grades, most deverbal *i*-stems seem to fit neatly into the “*toga*/*fuga* system” described in §2.3, especially those displaying possible *o*-grade, e.g., Skt. *rándhi-* ‘subjection, subjugation’ (type: *RoRT*) and *tují-* ‘propagation’ (type: *T_UT*). In fact, we only find three counterexamples: *dr̥śáye* ‘to see, to behold’ (but we always have zero grade in the Vedic infinitives), *granthí-* ‘knot, tie’ (but only if < PIE **g$^{(w)}$ronth$_2$-í-* and not *g$^{(w)}$ront-í-*), and *kr̥tí-* ‘knife’ (but maybe a *ti*-stem?). To these we may add a considerable number of examples where either the etymology or the expected ablaut grade according to the “*toga*/*fuga* system” is uncertain, e.g., *bhr̥mí-* ‘quickness’, *kr̥ṣí-* ‘ploughing, cultivation, agriculture’, and *taní-* ‘tones, music’.

As a final point of relevance, Sanskrit and Germanic match each other in one more area regarding the *i*-stems. Sanskrit gerundives can be formed by the addition of the suffix *-yá-* to a verbal root most often in the zero grade (cf. Debrunner 1954:789–95), thereby bearing a strong resemblance to the *i*-stem gerundives in Germanic of the types PGmc. **flugi-* ‘able to fly’ and **ēti-* ‘edible’; cf. §2.2. Furthermore, the fact that the Germanic *i*-stem adjectives of both functional types are also frequently formed with radical lengthened grade seems to find a perfect parallel in Sanskrit as illustrated by the comparison of Skt. *sā́di-* ‘rider, horseman’ (originally in compounds only) and Skt. *sādya-* ‘fit for riding’ to PGmc. **sēti-* ‘sitting; able to sit’, i.e., both adjectival agent noun/adjective and gerundive; cf.,

e.g., Debrunner 1954:295 and Heidermanns 1993:479–80. However, both Sanskrit forms mentioned here as well as their derivational types are of post-Vedic attestation, which increases the likelihood of the Germanic-Indic comparison invoked here constituting mere chance resemblance instead.

3.2. Greek

Greek primary deverbal *i*-stems display no clear derivational patterns, but according to Solmsen (1909:155–79) we may, with utmost caution and due reservations, identify two types; cf. also Chantraine 1933:111–2, Schwyzer 1959:462, Risch 1974:164–5, and Rau 2009:177, 181 for additional information on Greek *i*-stems. Solmsen's first type seems to consist of abstract nouns with radical, stressed zero grade,[9] e.g., πάλιν 'back, backwards' (fossilized form, to πέλομαι, < PIE **k^{w}ḗlh$_1$-i-*),[10] ἄγυρις 'gathering, crowd' (superficially resembling a zero-grade form, though maybe < PIE **h$_2$gor-i-*[11]), ῥάχις 'lower part of the back, chine' (probably of non-Indo-European origin to the "ablaut" **u̯rāgʰ- ~ *u̯ragʰ-* in ῥᾱχός, ῥηχός 'thorn-hedge, palisade' vs. ῥάχις; cf. Beekes 2010:1278), and σπάνις 'scarcity, lack' (maybe to πένομαι 'toil, work; am poor' < PIE **(s)penh$_1$-*, though cf. Chantraine 2009:997: "Inconnue" and Beekes 2010:1375: "Pre-Greek").

Compared to this one, the second type looks more uniform and contains, again according to Solmsen, (mostly) concrete nouns with radical, stressed *o*-grade, e.g., στρόφις 'slippery fellow, twister' (to στρέφω 'twist, turn' without any clear extra-Greek cognates), τρόπις 'keel' (to τρέπω 'turn, revolve' < PIE **trep-*, i.e. < **trop-i-*), τρόφις 'well-fed, stout, large' (to τρέφω 'make fat, feed, bring up' < PIE **dʰrebʰ-*, i.e. < **dʰrobʰ-i-*), τρόχις 'runner, messenger' (to τρέχω 'run, hurry' < PIE **dʰregʰ-*; cf. the comparison of Gr. τροχός 'wheel' to OIr. *droch* 'id.', i.e., **dʰrogʰ-i-*), φρόνις 'prudence, wisdom' (to the root of φρήν 'mind' without any clear extra-Greek etymology), and πόρις 'calf, young heifer' (to the root PIE

9 According to Chantraine 1933:111, all types of Greek *i*-stems have remodeled the original accent into a new system. Hence, the location of the accent in a given Greek *i*-stem reveals virtually nothing about the conditioning of Proto-Indo-European *i*-stem accentuation.

10 Etymological notes in this section are based mainly on Frisk 1960–72, Chantraine 2009, and Beekes 2010.

11 Aeolic *i*-stem variant of ἀγορά 'assembly'; cf. the development in Aeolic of Gk. -ορ- > -υρ- as per Schwyzer 1959:351–2.

**perh₃-* 'get, bear', i.e. < **porh₃-i-* meaning either '(new)born' or '(first) bearing').[12]

The question now remains if this categorization mirrors any older stages. Solmsen (1909:162) actually doubts this himself. Firstly, he points out, other *o*-grade derivatives may have influenced the *i*-stem concrete nouns with radical *o*-grade. Secondly, the very assignment of zero-grade *i*-stems to the group of abstract nouns and of *o*-grade *i*-stems to the group of concrete nouns is far from consistent; cf., e.g., the *i*-stem abstract noun φρόνις 'prudence, wisdom' with radical *o*-grade, which would be unexpected according to Solmsen's categorization. Even if Solmsen is right about the general tendencies in the synchronic *i*-stem system of Greek, it therefore lies beyond dispute that a different system must be reconstructed for the precursors of Greek, viz. a system with seemingly random assignment of radical *o*- and zero grade in both functional *i*-stem types and, consequently, with stronger affinities to the systems of Germanic and Indo-Iranian. Also, when analyzed in terms of the "*toga*/*fuga* system," the Greek deverbal *i*-stems are on a par with the Indo-Iranian ones with all *o*-grade examples fitting neatly into the system, whereas the zero-grade examples display too many uncertainties concerning etymologies or expected ablaut grades in the "*toga*/*fuga* system" to deduce any clear pattern.

4. Primary deverbal *i*-stems in Proto-Indo-European

I base the following brief outline of the Proto-Indo-European state of affairs on Sanskrit, Greek, and Germanic.

4.1. General types of i*-stems in Proto-Indo-European*

According to the preliminary analysis of the Indic and Greek material surveyed here, we find two prevalent types, viz. adjectival agent nouns and action nouns often functioning as verbal abstracts.

Adjectival agent nouns have a clear tendency in Sanskrit to stress the root; so, too, in Greek where, however, radical accent also prevails in the abstract noun type. Where a difference can be registered, Germanic points at suffixal accent in all *i*-stem forms but one, viz. PGmc. **kausi-* 'choosy'. As for the radical ablaut

12 In addition to these two types, we find an *i*-stem with radical lengthened grade, viz. Gk. δῆρις 'fight, battle, contest' (cf. also Widmer 2004:56; probably cognate with Skt. °*dāri-* 'splitting, cleaving', though cf. Euler 1979:135) as well as a general transition of deverbal *i*-stems with suffixal accent to ιδ-stems; cf. Schwyzer 1959:464.

grade, Indo-Iranian is less informative due to its coalescence of the primary vowels PIE **e*, **a*, and **o* > PIIr. **a*. It is beyond dispute, however, that radical zero grade is widely spread in both main deverbal *i*-stem types. Germanic and Greek reveal what Indo-Iranian cannot do or can do only to a limited extent, viz. that the other main ablaut grade found in this type of *i*-stems is the *o*-grade, to which we may add the (possibly) vṛddhi-caused lengthened *ē*-grade in this adjectival agent-noun type.

With the sole exception of a few forms in Greek and Sanskrit, the action nouns or verbal abstracts display a strong tendency to stress the *i*-stem suffix. Again, all three branches reveal that both radical *o*- and zero grade are attested even if zero grade seems to be by far the most frequent type; cf. especially the widely productive infinitives in Ved. *CC-áye*. When it comes to the gender of these *i*-stems, however, any agreement between the branches in question ceases completely: Greek and Sanskrit show a clear preference for feminine gender, more conspicuously so in Greek than in Sanskrit, whereas the bulk of Germanic *i*-stem verbal abstracts comes with masculine gender.

4.2. Deverbal i*-stems and the "*toga/fuga *system" in Indo-European*

Turning again to the radical ablaut grades of the deverbal *i*-stems, I have speculated as to whether the seemingly unregulated mix between *o*- and zero-grade forms could actually mirror anything regular in terms of Rasmussen's suggestion (1989:158–75) that the zero-grade type and the *o*-grade type were originally identical, the radical phonotactics constituting the sole determining factor for when to expect zero grade and when to expect *o*-grade.

In Germanic, the phonotactics of the root indeed seem to predict the radical ablaut grade (*o* or zero) of the deverbal *i*-stem nouns, but the principle of aligning the ablaut of this noun type with that of the preterite participle of a corresponding strong verb often disturbs this distribution. In the remaining branches, radical *o*-grade seems not to appear when not expected in the "*toga*/*fuga* system." That level of predictability does not hold true for the radical zero grade, which generally seems to prevail also outside its original environment. Therefore, we may actually succeed partially in using the "*toga*/*fuga* system" as a means of deciding whether a given deverbal *i*-stem in Indo-European is archaic or innovated. However, only with the *o*-grade forms may we rest assured that the result is reliable, since the zero-grade forms display many innovations that blur the original pattern.

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